WASTE ISOLATION PILOT PLANT

SITE PROFILE

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Office of Oversight
Environment, Safety and Health
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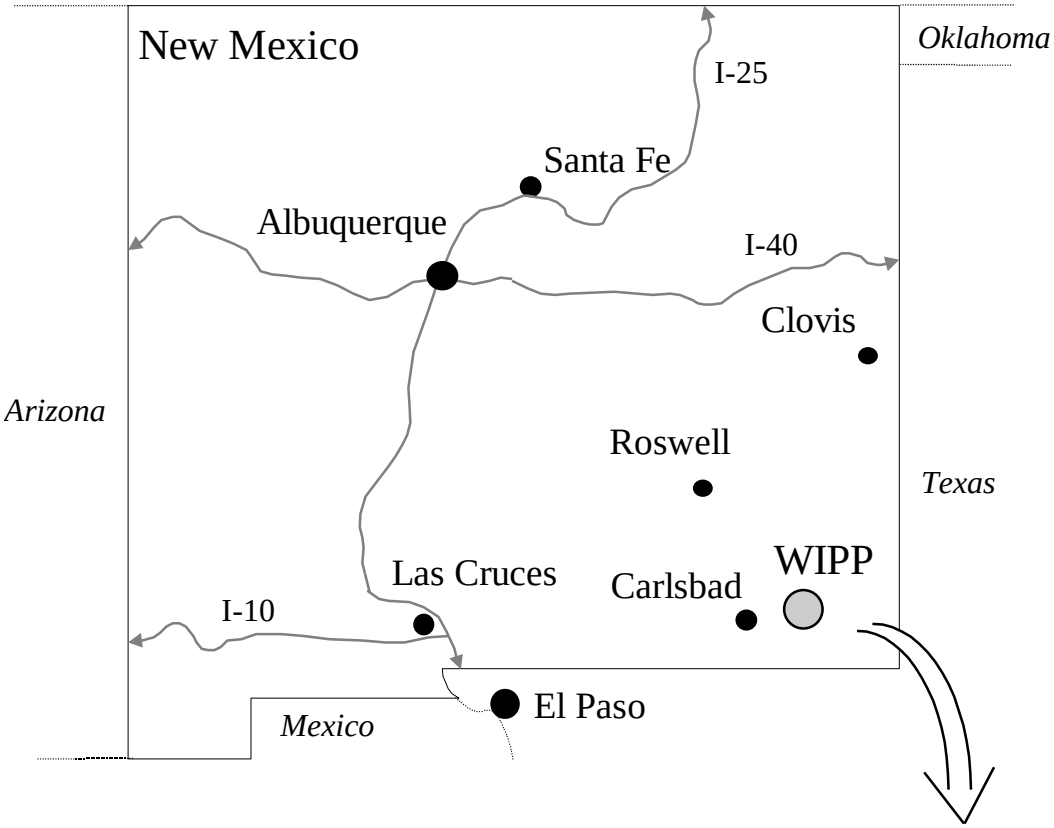
TABLE OF CONTENTS

Site profiles provide information on Department of Energy sites, including background; major environment, safety, and health initiatives and activities; items for management attention; and performance.

The electronic version of this site profile and other Office of Oversight documents referenced in this document can be accessed through the Internet at **http://tis.eh.doe.gov/oversight/bookcase2**.

Comments regarding the contents of this document should be directed to Larry McCabe at 301-903-2845, or via the Internet at **larry.mccabe@eh.doe.gov**.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Carlsbad
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El Paso
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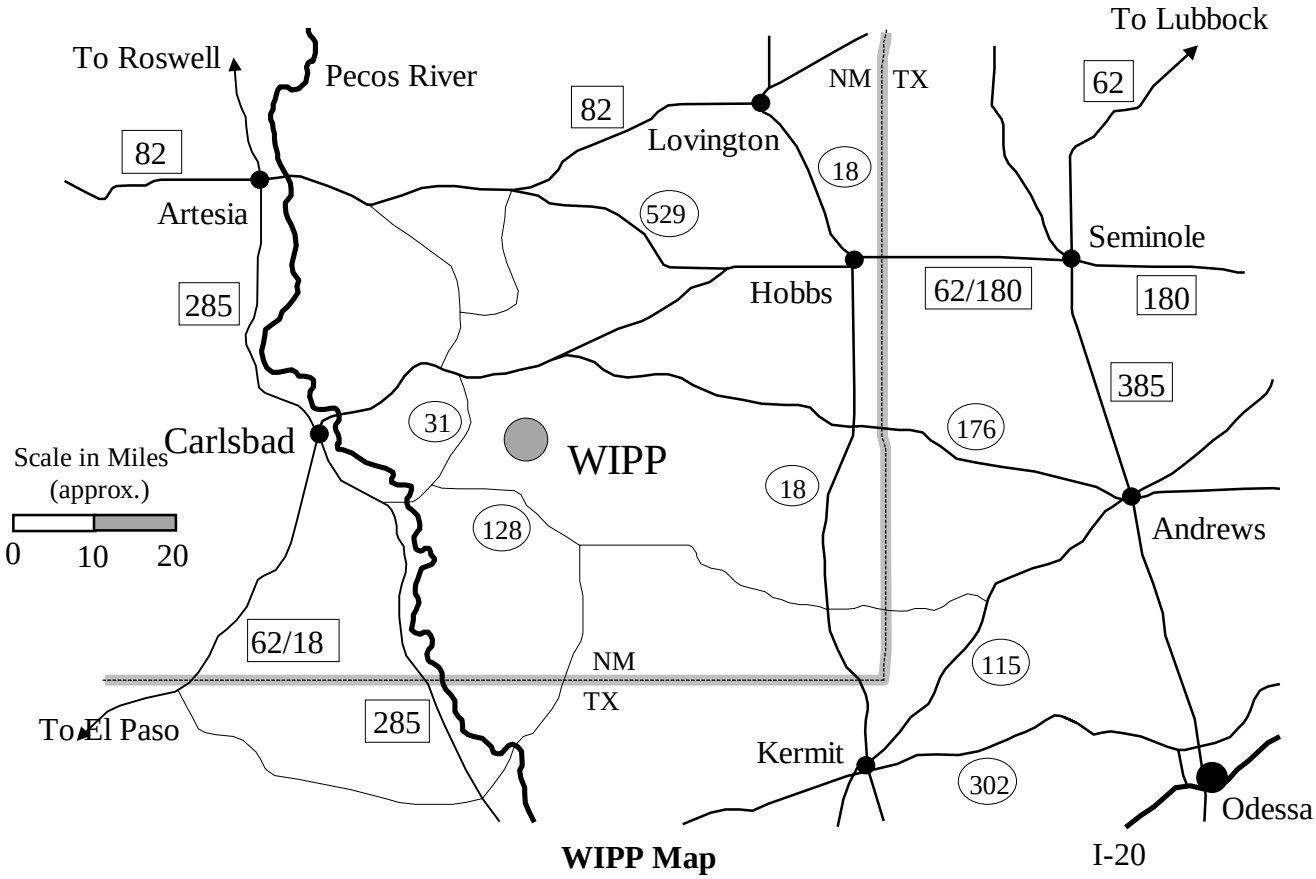
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62
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Seminole
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WIPP
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(approx.)
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128
Andrews
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115
To El Paso
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Kermit
302
Odessa
I-20

WIPP Map

WASTE ISOLATION PILOT PLANT

BACKGROUND

Description

The Waste Isolation Pilot Plant (WIPP) is the nationally designated repository for defense transuranic (TRU) radioactive waste.[1] The WIPP site is situated on a 10,240-acre reserve located in the southeastern corner of New Mexico, about 26 miles east of Carlsbad, New Mexico. The principal feature of the WIPP site is its deep underground (2,150 feet below grade) geological salt formation that has been mined out to serve as an underground waste repository. The site's mining complex includes surface support facilities, mine shafts, and a subsurface geological salt repository.

The physical site for WIPP was selected in 1975 following exploratory work by the U.S. Geological Survey, which investigated several candidate locations throughout the United States. Site selection was consistent with a National Academy of Sciences recommendation to Congress calling for the disposal of the Nation's defense-generated TRU waste into a stable geologic formation, such as a deep underground salt bed. In 1979, Congress passed Public Law 96-164 authorizing WIPP as a research and development site for the safe disposal of TRU waste. In 1981, the Department of Energy (DOE) began construction of the surface facilities and underground excavation of the salt mine. In 1988, the facility construction and mine excavation phase was completed. The WIPP site has completed its test and development phase and has received U.S. Environmental Protection Agency (EPA) waste disposal certification. On May 13, 1998, the Secretary of Energy notified Congress that WIPP was ready to receive and dispose of TRU waste. On March 26, 1999, the WIPP site received its initial shipment of non-mixed TRU waste from the Los Alamos National Laboratory.

Key WIPP facilities/programs can be put into three broad categories, including the underground mine and its associated subsurface facilities, the TRU waste handling facilities, and the TRU waste characterization and transportation systems.

Underground Facilities

The underground mine consists of excavations that are 2,150 feet below grade in bedded salt and serve as the geological repository for the TRU waste. When fully excavated, the WIPP repository will consist of ten waste storage panels. Each panel contains seven rooms that are 300 feet long, 33 feet wide, and 13 feet high. Although only Panel One is currently excavated, new tunneling began on July 21, 1999, to provide a 450-foot access tunnel to the next panel. This new tunnel will provide additional ventilation and personnel/equipment access to Panel Two. A major excavation of Panel Two is scheduled for October 21, 1999, to increase the TRU waste storage capacity of WIPP.

Four shafts connect the surface to the underground facilities, including a waste shaft, a salt shaft, an air intake shaft, and an exhaust shaft. Both the waste and salt shafts are equipped with hoists for transporting personnel and material. The air intake and exhaust shafts provide ventilation for the underground areas. The air intake shaft is also equipped with a personnel conveyance hoist for shaft maintenance and emergency egress.

Waste Handling Facilities

The waste handling facilities include loading/unloading areas for transporting TRU

[1]TRU waste is laboratory and process waste contaminated with transuranic radionuclides. TRU waste contains more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years.

waste to the underground storage areas through the waste shaft.

TRU Waste Characterization and Transportation System

TRU waste is transported to the WIPP under the requirements of DOE's National TRU Waste Transportation program. Before a shipment can be received at WIPP, the TRU waste must be characterized and certified by the generating site to meet WIPP's TRU waste acceptance criteria. TRU waste is subsequently shipped to WIPP on a dedicated tractor-trailer inside a sealed Nuclear Regulatory Commission (NRC)-approved Transuranic Package Transporter Model II (TRUPACT-II) shipping container. These non-vented stainless steel units are eight feet in diameter and ten feet high, with a gross weight of 19,000 pounds. Each TRUPACT-II container holds fourteen 55-gallon steel drums, or two standard waste boxes, or one ten-drum overpack. However, due to size, weight, and waste content considerations, not all shipments can accommodate three fully loaded TRUPACT-II containers. Specially designed trucks driven by qualified drivers use U.S. Department of Transportation (DOT)-approved routes to transport the TRUPACT-II containers to WIPP. WIPP maintains contact with each driver by two-way radio and satellite monitoring system.

The site's key facilities are described in Appendix A. Each facility's description includes its mission/status, hazard classification/authorization basis, worst-case design basis accident, and principal hazards and vulnerabilities. For the purpose of the profile, a key facility is a facility, building, or complex that is significant from an environment, safety, or health perspective.

Mission

The WIPP mission is to safely dispose of DOE's TRU waste.

Management

The Assistant Secretary for Defense Programs (DP-1) is the lead program secretarial office that has overall ownership responsibility for WIPP operations. The Assistant Secretary for Environmental Management (EM-1) is the cognizant secretarial office with line accountability for the operational performance, including ES&H activities, of the WIPP facility. Within EM, the Office of Western Programs (EM-36) primarily supports the Carlsbad Area Office (CAO). The principal Headquarters offices and their areas of involvement are indicated in Table 1.

Table 1. Principal Headquarters Program Offices Responsible for WIPP

Headquarters Program Office	Responsibility
Office of the Assistant Secretary for Defense Programs (DP-1)	Lead program secretarial office
Office of the Assistant Secretary for Environmental Management (EM-1)	Cognizant secretarial office
Office of the Assistant Secretary for Defense Programs (DP-1)	Provides technical/administrative support
Office of Western Operations (EM-36)	Provides Headquarters liaison

CAO reports directly to EM-1 and oversees the site contractor, the Waste Isolation Division (WID) of the Westinghouse Electric Company, whose responsibilities include environment, safety, and health (ES&H) programs. AL provides administrative and technical support. Sandia National Laboratories (SNL) provides research expertise to the Department on scientific matters. The operating structure of WIPP is shown in Table 2.

Table 2. WIPP Operating Structure

Office of Environmental Management (EM-1) Responsible for management and administration of the prime contract	
Carlsbad Area Office (CAO) Responsible for administration of management and operating contract, oversight of WIPP operations, and ES&H programs	
Contractors	**Responsibilities**
Waste Isolation Division of Westinghouse Electric Company (WID)	Management and operating contractor responsible for site management, operations, ES&H, and administrative functions
Sandia National Laboratories (SNL)	Conduct research and provide scientific advice
Carlsbad Technical Assistance Company	Provide technical assistance
WID Subcontractors	**Responsibilities**
Day and Zimmermann	Security force and records management
Budwine	Electrical contractor
Construction Inc.	Heavy construction

The contract between DOE and WID consists of a firm fixed price contract with fixed price incentive and cost plus award fee. On August 5, 1999, the Energy Secretary stated that DOE would seek an open recompetition of the WID contract upon its expiration on September 30, 2000. The WIPP subcontractor companies have been supporting the site for several years and are familiar with work control processes and procedures.

CAO currently has a staff of 58, with a total of 63 authorized positions. WID has 630 employees at WIPP, and SNL about 30 employees. There are about 150 subcontractor employees at WIPP.

Budget

The information appearing in this section has been gathered from a number of sources and represents the best available budget information at the time of profile publication. This information is dynamic, depending on the point in the budget cycle at which it is obtained. It is included to provide the reader with a sense of the magnitude and sources of the budget for this site. It is not intended to be the definitive source of budget information.

Table 3. WIPP Funding Summary

Organization	FY 1999 Actual	FY 2000 Request
Office of Environmental Management (EM)	$186 million	$186 million
Total	$186 million	$186 million

Source: CAO Budget Office

Facility and Process Operations

WIPP has completed its test and development phase and is receiving non-mixed TRU waste from the Los Alamos National Laboratory (LANL), the Idaho National Engineering and Environmental Laboratory (INEEL), and the Rocky Flats Environmental and Technology Site (RFETS). On March 22, 1999, EPA certified that TRU waste stored at LANL met the Federal standards for storage at WIPP. On March 26, 1999, the first shipment of non-mixed TRU waste was received at WIPP from LANL. LANL plans a total of 5,400 additional TRU shipments.

The first TRU waste shipment from the INEEL was received at WIPP on April 28, 1999.

INEEL plans to dispatch approximately 8,900 additional shipments.

The first TRU waste shipment from the RFETS was received at WIPP on June 16, 1999. RFETS plans to send approximately 2,500 additional shipments.

Although only LANL, INEEL, and RFETS are currently certified to ship TRU waste to WIPP, preparations are under way to certify two other sites. The Hanford Site is scheduled to begin sending TRU waste to WIPP on November 15, 1999, and the Savannah River Site (SRS) is scheduled to start shipping TRU waste on February 7, 2000. Both sites must have TRU waste certifications from WIPP officials before actual shipping to WIPP can begin.

Hanford plans to send approximately 17,000 shipments, and SRS plans to dispatch nearly 2,200 shipments of TRU waste.

Upon arrival at WIPP, each waste shipment receives a security inspection, radiological survey, and shipping document review. After these checks are completed, a forklift removes each TRUPACT-II from the trailer and places it on a TRUPACT-II unloading dock (TRUDOCK). In the TRUDOCK, the TRUPACT-II is opened. Waste packages are removed from TRUPACT-II and transferred to a facility pallet. A forklift transfers the pallet to the waste hoist. The waste hoist then transports the loaded facility pallets from the Waste Handling Building to the underground repository.

At the underground waste shaft station, the loaded facility pallet is transferred onto an underground transporter and moved to its designated emplacement location. A forklift removes the waste containers from the facility pallet and places the containers into a final configuration.

Significant Commitments to Stakeholders

Major Federal and State Agencies

EPA is responsible for certifying that WIPP meets the standards for the disposal of defense-related radioactive non-mixed TRU waste. EPA issued a certificate of compliance to WIPP on May 13, 1998. The State of New Mexico administers the Resource Conservation and Recovery Act (RCRA), including the certification program for mixed radioactive and hazardous material TRU waste. WIPP may not receive RCRA-regulated mixed TRU waste until the Part B permit is issued.

Other Stakeholders

WIPP enjoys strong local support. The City of Carlsbad Mayor's Task Force on WIPP keeps the Mayor and City Council informed and active on WIPP issues. On September 18, 1998, a local delegation met with the Secretary of Energy and the New Mexico Congressional delegation to express its support for WIPP. However, several groups are opposed to WIPP. Most notable is the Southwest Research and Information Center, located in Albuquerque, NM, which filed several lawsuits against both the DOE and the EPA. Other activist groups include the Concerned Citizens for Nuclear Safety, the Citizens Against Radioactive Dumping, the Physicians for Social Responsibility, the Rocky Mountain Peace and Justice Center, and the Snake River Alliance.

Cooperative Agreements

The Department has a cooperative agreement with the Western Governor's Association, which also represents the States of Pennsylvania, Maryland, Delaware, West Virginia, and New Jersey. In addition, cooperative agreements have been reached with several Native American tribes. These agreements provide grants and facilitate emergency aid and assistance by the States or Native American tribes, in case of a TRU waste transportation mishap.

Environmental Evaluation Group

The Department has a contract with an independent technical oversight group, the Environmental Evaluation Group, which advises the Department regarding WIPP issues and activities.

Defense Nuclear Facilities Safety Board (DNFSB) Recommendations

There are no site-specific DNFSB recommendations applicable to WIPP.

MAJOR ENVIRONMENT, SAFETY, AND HEALTH INITIATIVES/ACTIVITIES

Issuance of Federal and State Permits

On May 13, 1998, EPA approved the DOE plan to operate WIPP. DOE has also applied for a RCRA Part B Permit from NMED. On May 15, 1998, NMED issued a draft permit and issued the final RCRA Part B Permit, effective November 26, 1999.

Waste Acceptance Certification by WIPP

CAO independently certifies the sites from which the waste is shipped to the WIPP. WIPP has certified three sites as currently acceptable for shipping TRU waste to WIPP, including LANL, RFETS, and INEEL.

DOE Voluntary Protection Program (DOE-VPP) Certification

WIPP earned DOE-VPP "Star" recognition in October 1994 due to its excellence in occupational safety and health programs. On June 4, 1999, the DOE Office of Environment, Safety and Health re-certified WIPP as a "Star" site for an additional three years.

International Standards Organization (ISO) 14001 Certification

WIPP has received ISO 14001 certification for management of its environmental programs.

ENVIRONMENT, SAFETY, AND HEALTH ITEMS FOR MANAGEMENT ATTENTION

Based on available information during the last six months, the Office of Oversight has not identified any significant ES&H items for management attention.

RECENT SITE PERFORMANCE

Major Events

WIPP received its first shipment of TRU waste from the LANL on March 26, 1999. Subsequently, WIPP received its first TRU waste shipment from INEEL on April 28, 1999, and its first shipment from RFETS on June 16, 1999.

Results of Major Recent Assessments

National TRU Waste Plan Update

In September 1999, the DOE Office of Inspector General (IG) recommended that the CAO update its national TRU waste management plan to reflect the delayed opening of WIPP. The WIPP shipping schedule cited in the current plan will not be met because WIPP opened ten months later than the plan assumed it would, according to the IG report. The plan also based shipping schedules on fully funded site-specific budgets. The IG report also stated that the national TRU waste management plan is the only DOE plan that coordinates site-specific waste management planning at the generator site facilities with WIPP waste handling and disposal operations. The IG report included two recommendations: first, that EM require CAO to update the plan as soon as possible; and second, that CAO seek adequate funding for each generator site and notify Congress of the impact on generator sites and WIPP if they do not receive enough money. The CAO agreed with these recommendations and promised to issue a revised plan in late 1999. The IG report also said the plan indicates that WIPP is scheduled to receive a greater volume of waste than generator sites could ship from FY 2000 through FY 2006. The report concluded

that since the generator sites cannot ship the volume of waste described in the management plan without budget increases, there is no assurance that generator sites or WIPP will be able to close by the dates cited in the management plan. The report, "Planned Waste Shipments to the Waste Isolation Pilot Plant," is available on the Internet at **http://www.hr.doe.gov/ig**.

Integrated Safety Management Verification

As required by the Department of Energy Acquisition Regulations (DEAR 48 CFR 970), the contractual agreement between DOE and WID requires that WID integrate safety into management and work practices at all levels. This safety integration process assures that site programs, processes, and objectives are achieved while protecting the public, site workers, and the environment. WID developed appropriate integrated safety management system (ISMS) programs and processes for the site, including the implementation documentation. An independent Headquarters team subsequently conducted an onsite review of the ISMS effort during the summer 1998. The review team verified that ISMS programs were in place at WIPP and conformed to the guidance provided by the CAO Manager. The team also concluded that contractor management effectively tailored corporate policy to the specific hazards associated with WIPP. The ISMS Combined phase I/Phase II verification report was issued in September 1998 and the full text of the team's report is available on the WIPP Home Page at **http://www.wipp.carlsbad.nm.us/.**

Appendix A. Key Facilities Summary

FACILITY	MISSION/ STATUS	HAZARD CLASSIFICATION/ AUTHORIZATION BASIS	WORST CASE DESIGN BASIS ACCIDENT	PRINCIPAL HAZARDS AND VULNERABILITIES
Underground mine and facilities	**Mission:** Disposal of TRU waste **Status:** operational	Category 2 Safety analysis report (SAR) dated March 14, 1997	Roof fall, loss of ventilation, failure of waste hoist, waste container breach.	Worker exposure to radiation, loss of breathable air, worker injury or fatality due to fall from roof.
Transportation system	**Mission:** Transport of TRU waste on DOT-approved routes **Status:** operational	NRC and DOT-certified waste containers	TRUPACT-II breach in a traffic accident.	Release of radioactivity to environment.
Waste handling facilities	**Mission:** Unloading TRU waste and transporting it to waste shaft **Status:** operational	Category 2 SAR dated 3/14/97	Waste container drops and breaches due to equipment failure or human error.	Release of radiation to environment and worker exposure to radiation.

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